

## **REMARKS**

Claims 1-20 are pending in this application, with claims 1-6 withdrawn from consideration. Attached hereto is a complete listing of all claims in the application, with their current status listed parenthetically. By this Response, no claims have been amended, cancelled or withdrawn.

### **Drawings**

In paragraph 3 of the Office Action, the Examiner objects to the drawings. Specifically, the Examiner requests that the terms "pseudo-random method," "spectral line," "pseudo-random timing sequence," and "time bins" be illustrated in the figures.

35 U.S.C. § 113, and 37 CFR 1.81 require that an "applicant shall furnish a drawing where necessary for the understanding of the subject matter to be patented." The terms "pseudo-random method," "spectral line" and "pseudo-random timing sequence" are discussed in detail in the originally-filed specification, for example, starting on page 26, line 5 to page 27, line 6. The term "time bins" is discussed in detail in the originally-filed specification, for example, on page 14, lines 12-22.

Upon reading the specification, one skilled in the art would understand the terms "pseudo-random method," "spectral line," "pseudo-random timing sequence," and "time bins" as they clearly disclosed in the originally-filed specification.

Therefore, illustrating these terms is not necessary for the understanding of the subject matter to be patented. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw this objection.

## **Terminal Disclaimer**

In paragraph 5 of the Office Action, the Examiner provisionally rejects claims 7-20 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7, 9 and 11-13 of U.S. patent application serial no. 10/663,174.

In response, Applicant submits a terminal disclaimer (PTO/SB/26), and requisite 37 C.F.R. 1.20(d) fee.

## **Rejection Under 35 U.S.C. § 103(a)**

In paragraphs 6 and 7 of the Office Action, claims 7-20 stand rejected as unpatentable under 35 U.S.C. § 103(a) over U.S. published patent application 2003/0189975 ("Fullerton") in view of U.S. patent 5,535,239 ("Padovani"). Applicant respectfully traverses this rejection.

### **A. The Law of Obviousness**

In order to establish a prima facie case of obviousness, three basic criteria must be met:

"First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined), must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's disclosure." M.P.E.P. § 2142.

The Examiner cites Fullerton for teaching ultra-wideband:

"Fullerton discloses a communication system comprising the following features: regarding claim 7, an ultra-wideband communication method; regarding claim 16, an ultra-wideband communication method; regarding claim 17, and ultra-wideband communication device. See Abstract."

Specifically, Fullerton's Abstract reads, in part: "The transceiver comprises an impulse radio transmitter that transmits impulse radio signal pulses, an impulse radio receiver that receives impulse radio signal pulses."

"Impulse radio signal pulses" (i.e., "ultrawide-band impulse communications" [page 1, para. 0003]), as taught by Fullerton, comprise: "short duration pulses; center frequencies typically between 50 MHz, and 10 gigahertz (GHz); ultrawide bandwidths of 100+% of the center frequency" [page 3, para. 0042]. As shown in Fullerton's FIGS. 1A-B, each short duration pulse may have a duration of about 500 picoseconds, and occupy 5 gigahertz of radio frequency bandwidth. Fullerton's "impulse radio transmitters emit short Gaussian monocycle pulses with a tightly controlled average pulse-to-pulse interval. Impulse radio transmitters use pulse widths of between 20 and 0.1 nanoseconds (ns) and pulse-to-pulse intervals of between 2 and 5000 ns." [page 3, para. 0049].

The Examiner then cites Padovani for allegedly supplying the remaining teachings of Applicant's claims. Padovani teaches a data burst randomizer for "a CDMA mobile station transceiver or PCN handset. In a CDMA cellular communication system a forward CDMA channel is used to transmit information from a cell base station to the mobile station" (col. 4, lines 13-18).

Thus, Padovani teaches conventional cellular communications that employ a continuous sinusoidal carrier wave radio frequency signal. Specifically, in the United States, the Federal Communications Commission has allocated cellular phone communications to the 800 to 900 MHz band. Cellular phone operators use 25 MHz of the allocated band to transmit cellular phone signals, and another 25 MHz of the allocated band to receive cellular phone signals. These radio frequency signals comprise continuous sinusoidal carrier waves.

Thus, Fullerton teaches impulse ultra-wideband communications that employs discrete pulses having a duration of about 500 picoseconds, with each pulse occupying 5 gigahertz of radio frequency bandwidth. In contrast, Padovani teaches a conventional cellular phone communication system that employs a continuous sinusoidal carrier wave that occupies up to 25 MHz of radio frequency bandwidth.

As explained above, the Office Action makes a Section 103 rejection by combining two references, Fullerton and Padovani. Because a modification to the prior art is required to support this 35 U.S.C. § 103 rejection, an appropriate motivation to modify must be set forth in order to establish a *prima facie* case of obviousness. See, *In re Fritch*, 972 F.2d 1266 (Fed. Cir. 1992).

#### **I. No motivation to combine references**

M.P.E.P. § 2143.01 states: "if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teaching of the references are not sufficient to render the claims *prima facie* obvious."

As discussed above, Padovani teaches a conventional cellular phone communication system that employs a continuous sinusoidal carrier wave that occupies up to 25 MHz of radio frequency bandwidth.

Fullerton teaches impulse ultra-wideband communications that employs discrete pulses having durations of about 500 picoseconds, with each pulses occupying 5 gigahertz of radio frequency bandwidth.

Applicant's originally-filed specification discusses the differences between conventional cellular communications and ultra-wideband communications, starting on page 9, line 3 to page 10, line 21.

Put simply, ultra-wideband communications (as taught in Fullerton) and conventional carrier wave communications (as taught in Padovani) are completely different technologies that operate in a fundamentally different manner, and thus there is no motivation to combine these references.

## **II. No reasonable expectation of success.**

The second prong of a *prima facie* case of obviousness requires a reasonable expectation of success. "The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's disclosure." M.P.E.P. § 2142.

The Examiner proposes to combine the Fullerton teaching of impulse ultra-wideband communications with Padovani's teaching of conventional cellular communications.

It now should be readily apparent from the above discussion that the technologies employed by Fullerton and Padovani are not combinable. For example, how would Padovani incorporate Fullerton's impulse transmitters and receivers into his invention? In fact, it is impossible to combine Padovani's conventional carrier wave technology with Fullerton's impulse transmitters and receivers.

Put differently, Padovani's PCN handsets receive a 25 MHz continuous carrier wave signal. Fullerton transmits a multiplicity of 500 picosecond duration pulses, with each pulse occupying 5 gigahertz of radio frequency bandwidth. Neither system is capable of generating or receiving the other's signal. Thus, there is no suggestion or motivation to combine these references.

In view of the above discussion, Applicant respectfully submits that the Section 103 rejection of claims 7-20 has been traversed.

### Conclusion


Applicant believes that this Response has addressed all items in the Office Action and now places the application in condition for allowance. Accordingly, favorable reconsideration and allowance of claims 7-20 at an early date is solicited. The Commissioner is authorized to charge any additional fee required to our Deposit Account No. 50-3143, in the name of Pulse-Link, Inc. Should any issues remain unresolved, the Examiner is invited to telephone the undersigned.

November 16, 2005

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Date

Respectfully submitted,



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